COMMUNICABLE DISEASES

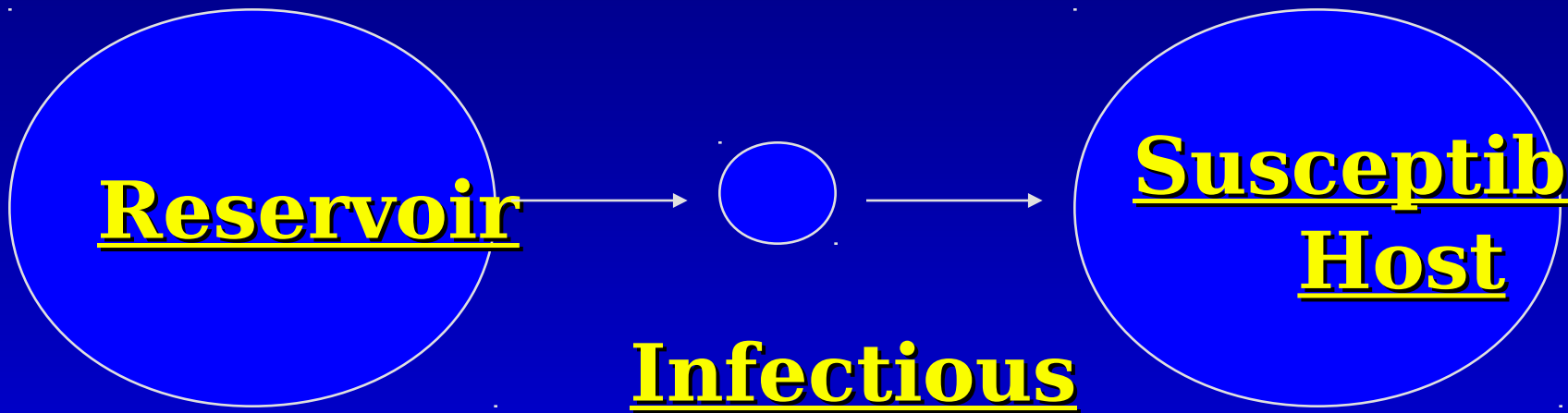
OVERVIEW

- Disease Process
- Infectious Agent
- Reservoir
- Susceptible Host
- Portal of Exit/Entry
- Mode of Transmission
- Prevention and Control
- PH Responsibilities/Regulations

Communicable Diseases

- An illness due to a specific infectious agent or its toxic product that arises through transmission of that agent or its products from an infected person, animal or inanimate reservoir to a susceptible host

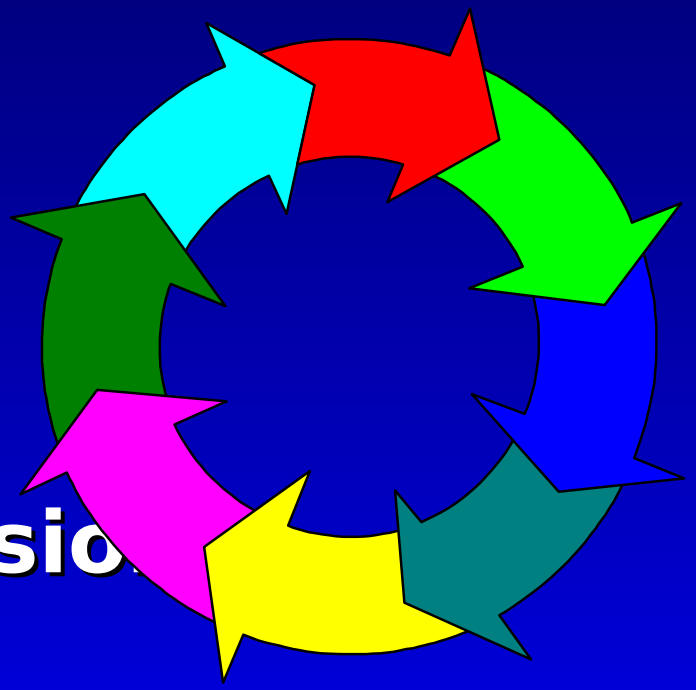
Communicable Disease Process



(via direct, indirect, airborne)

6 ESSENTIAL ELEMENTS

- Infectious agent
- Reservoir
- Susceptible host
- Portal of exit
- Mode of transmissio
- Portal of entry



INFECTIOUS AGENT CHARACTERISTICS

- **Examples: Virus, bacteria, protozoan, fungus, rickettsia, helminth**
- ***Goal*: invade, grow, reproduce**
- **Infectivity**
- **Pathogenicity**
- **Virulence**
- **Ability to survive free in environment**
- **Other factors (dose, duration of exposure)**

DEFINITIONS

- ***Infectivity*** **is the ability of an agent to lodge (infect) and multiply in a host**
- ***Pathogenicity*** **is the ability of an agent to cause disease in a susceptible host**
- ***Virulence*** **is the ability of an agent to cause severe disease in a host**

RESERVOIR

- ***Definition***: **where an infectious agent normally lives and multiplies; agent depends on reservoir for survival**
- **Man, animal, arthropod, plant, soil, environment or fomite**

Hint: Doesn't have to be a living being

HOST

- ***Definition***: ***living*** **person or animal (including birds and arthropods) that provides a place for infectious agent to live**
- ***Susceptible Host***: **living person or animal (including birds and arthropods) that provides a place for infectious agent to live; *lacks sufficient resistance to prevent infection when exposed to a pathogenic agent***

Host Risk Factors

- ***Risk factors*** *are characteristics that increase the likelihood that a person will acquire a specific disease*
- *Risk factors that influence susceptibility*
  - **Genetic factors (age, sex, etc.)**
  - **Host immunity and general health**
  - **Nutritional status**
  - **Disease/therapies that impair immunity**

Source of infection could be from a reservoir or an infected host

DEFINITIONS

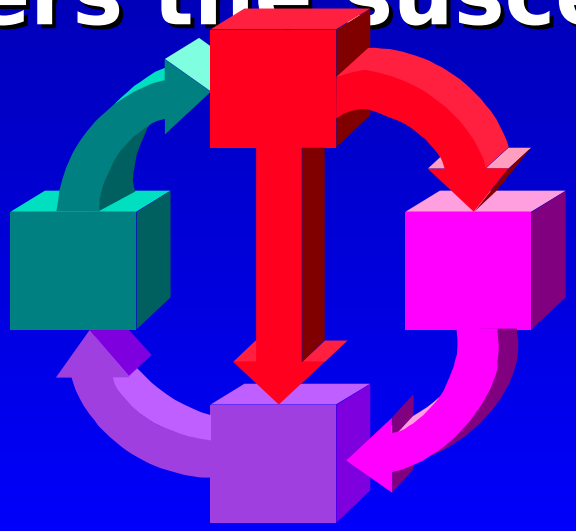
- ***Host immunity*: the ability of the host to resist an invading organism_**
- ***Immune*: a person or animal that is resistant to invading organisms (usually associated with presence of specific antibody)**
- ***Susceptible*: a person or animal lacking resistance to invading organisms (usually associated with lack of specific antibodies)**

DEFINITIONS

- ***Carrier***: a person or animal that harbors a specific infectious agent without obvious clinical disease and serves as a potential source of infection
- ***Contact***: a person or animal that has been in such association with an infected person or animal or a contaminated environment as to have had an opportunity to acquire the infection

PORTAL OF EXIT/ENTRY

- ***Exit*** **- Path by which an agent leaves the source host or reservoir**
- ***Entry*** **- path by which an infected agent enters the susceptible host**



MODE OF TRANSMISSION

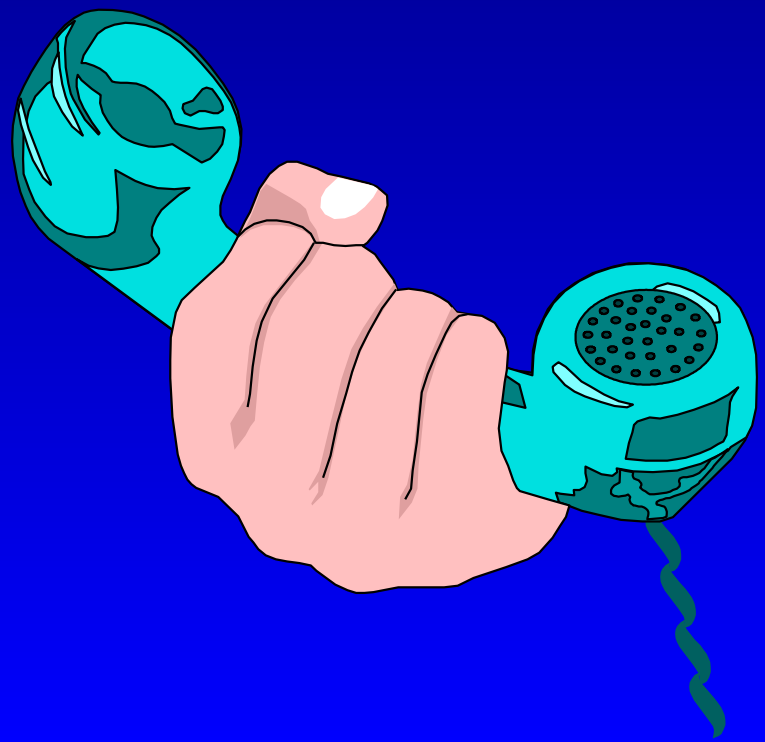
- ***Definition***: transfer of infectious agent from a source or reservoir to a person
  - Direct
  - Indirect
  - Airborne

DIRECT TRANSMISSION

- Direct contact
- Droplet spread
  (3 feet or less)

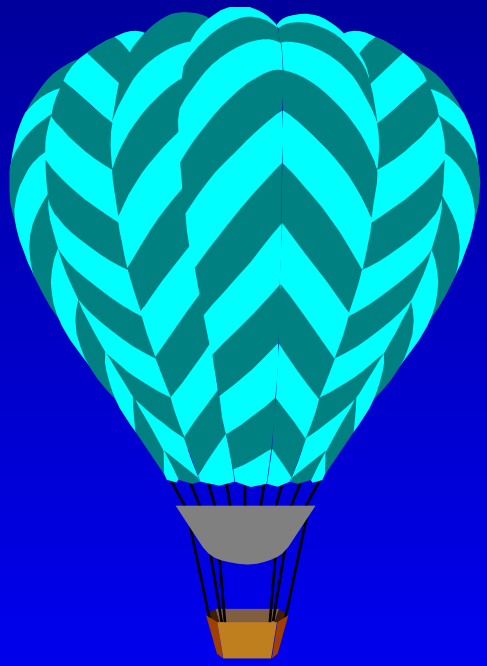
INDIRECT TRANSMISSION

- Vehicle-borne (inanimate)
- Vector-borne (animate)
  - Mechanical
  - Biologic



AIRBORNE TRANSMISSION

- Droplet nuclei (dried droplet)
- Dust



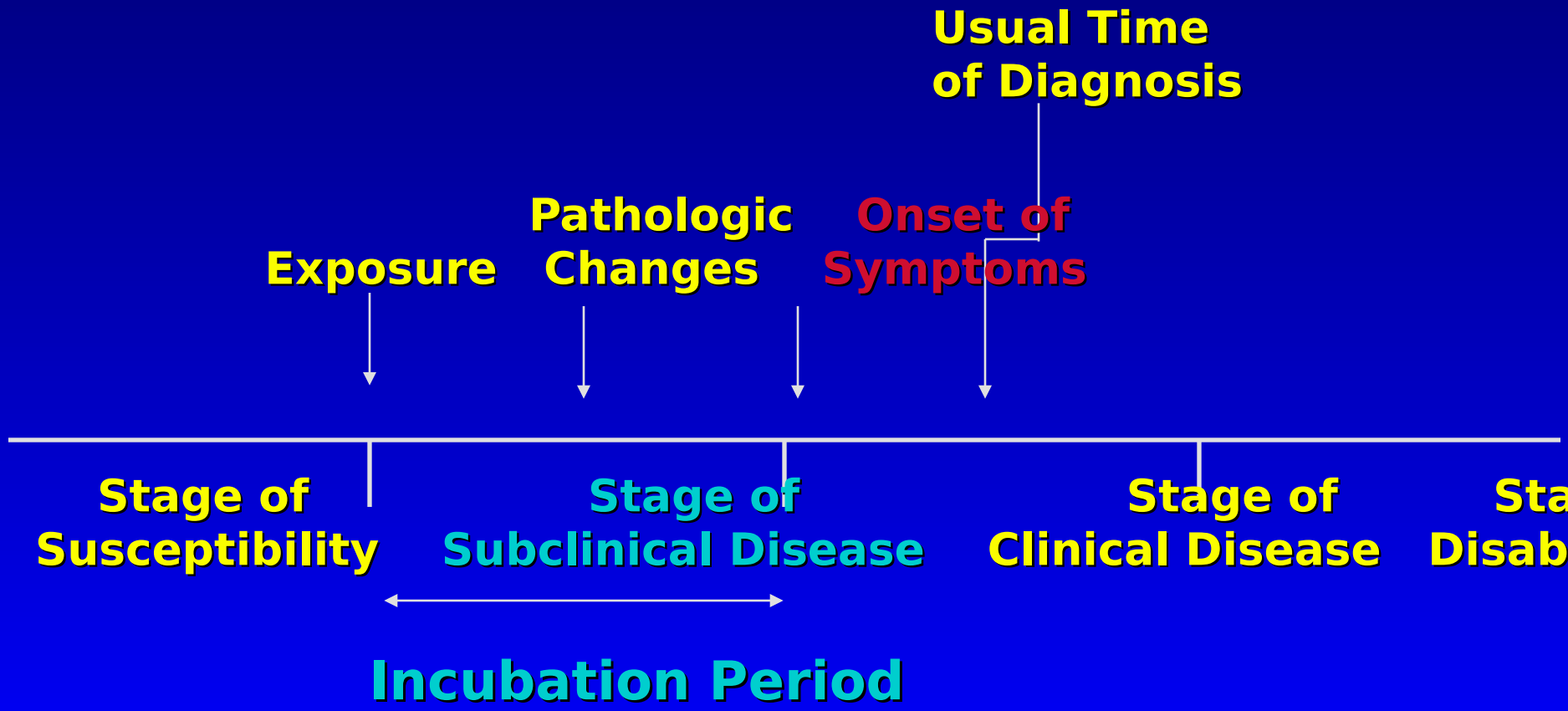
Definition

- ***Incubation Period*: the time interval between initial contact with an infectious agent and the first appearance of symptoms associated with the infection**

Definition

- ***Period of Communicability:*** **the time during which an infectious agent may be transferred directly or indirectly from an infected person to another person, from an infected animal to humans, or from an infected person to animals, including arthropods.**

NATURAL COURSE OF DISEASE

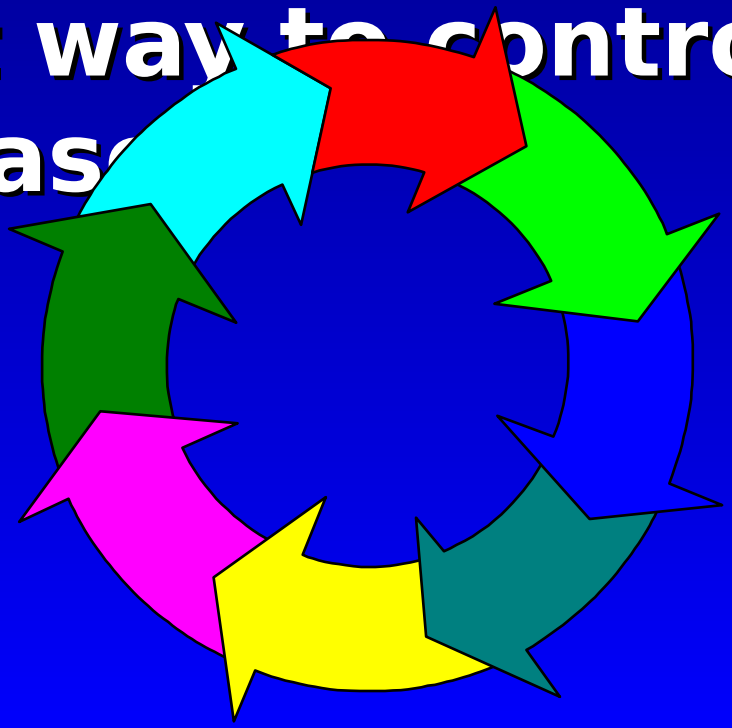


PREVENTION & CONTROL

- ***Prevention***: ***Stop*** **the occurrence of disease**
- ***Control***: **Reduce or stop the further spread of disease once it has already occurred**

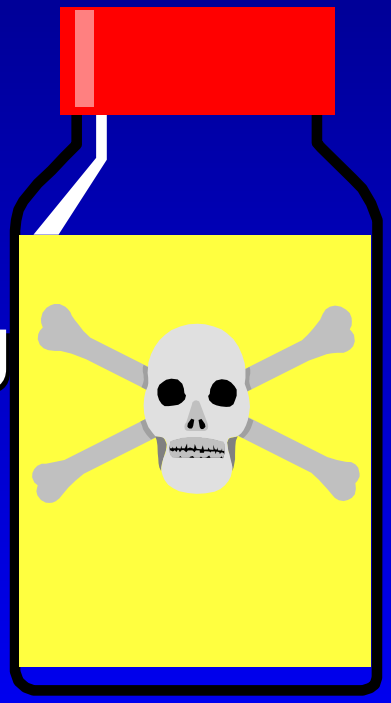
Control Disease

- **Break the chain of infection!**
  - **Best way to control disease**



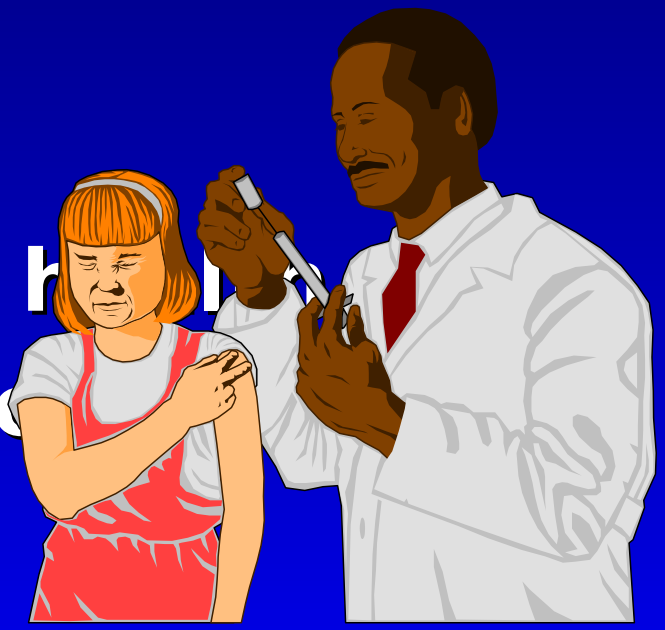
Break the Chain of Infection
Infectious Agent

- ***Goal*: Inactivate infectious agent**
  - **Heat**
  - **Cold**
  - **Radiation/UV lig**
  - **Chemicals**
  - **Medications**



Break the Chain of Infection Susceptible Host

- ***Goal*: Increase host resistance**
- **Immunizations**
- **Improve general h**
- **Treat ill populati**



Break the Chain of Infection Transmission

- ***Goal*: Prevent further spread**
  - **Maintain good skin integrity**
- **Cover mouth when coughing**
- **Wash hands**
- **Prevent blood and body fluid exposures**
- **Cover wounds**
- **Personal protective equipment**
- **Condoms**
- **Public Health education**

Break the Chain of Infection Transmission

- Environmental prevention/control measures
  - Control vectors
  - Sanitary disposal of wastes
  - Good sanitation
  - Control pollution of air, dust and dirt
- Public Health education
- Isolation and Quarantine

Break the Chain of Infection Definitions

- ***Isolation***: the separation for the period of communicability of infected persons or animals from those who are not infected
- ***Quarantine***: the separation of exposed (well) persons or animals during the incubation period from those who are not infected

Break the Chain of Infection

- **Public Health education is one of our most important tools to prevent and control disease**
- **We can do a lot to impact the health of a population through education!!!**

AFI 48-105
Control of Communicable Diseases

PH RESPONSIBILITIES

- Report communicable diseases
  - Higher headquarters via ASIMS (Epi Module)
- Conduct disease surveillance
- Investigate disease outbreaks
- Recommend prevention and control measures

SURVEILLANCE

In order to report communicable diseases, we have to track them.

HOW?

Public Health Surveillance

- ***PH surveillance*** **is the ongoing systematic collection, analysis, interpretation, and dissemination of health data.**

Purpose

- Mechanism to monitor the health of communities
  - Set priorities (resources and financial)
  - Plan programs
  - Take actions to promote and protect the public's health

Purpose of Surveillance

- **To detect sudden changes in disease occurrence and distribution**
- **To follow long-term trends and patterns of disease**
- **To detect changes in health care practices**
- **To identify high risk groups**

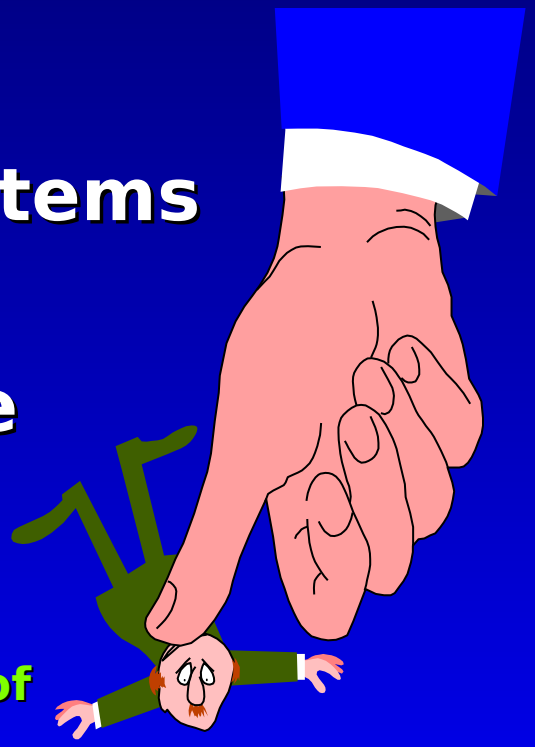
Without surveillance, how do you know if you have a problem??

Surveillance Data

- **Results of Communicable Disease Reporting - ASIMS (Epi) Module**
- **Investigate unusual cases or greater than expected number of cases**
- **You have to have good baseline data and an effective surveillance program!!!**

BASELINE DATA

- Providers reports
- Lab logs
- Outpatient Data Systems
- Listening
- Sometimes you have to be creative!!



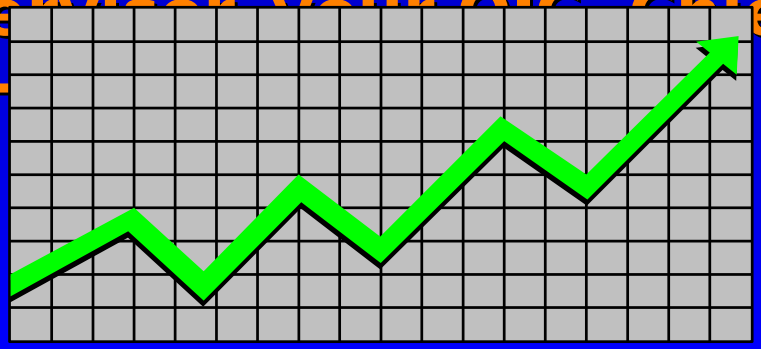
Keep your thumb on the pulse of your clinic/hospital!!!

If your disease numbers are higher than normal….

(How do you know what normal is?!)

REPORT IT!!!

(To your supervisor, your OIC, Chief Aerospace Medicine, H… and Epi Lab)



PROVIDER RESPONSIBILITIES

- Are supposed to report diseases on Tables 1 & 2, other reportable diseases to PHO
- Any unusual or excessive communicable disease or health-related conditi

SUMMARY

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